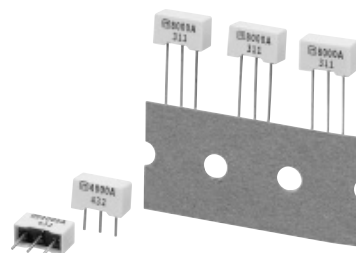


Ceramic Resonators (Built-In Capacitor Type)

Type: **EC** (2.0 to 50.0 MHz)

Ceramic Resonator, Built-In Capacitor Type, includes two capacitors constructing "Colpitts oscillation circuits".



■ Features

- Wide range of oscillation frequency: 2.0 to 50 MHz
- No need for capacitors in oscillation circuit
- High accuracy, high stability
Initial frequency tolerance: ± 0.3 to 0.5 %
- Excellent temperature characteristics (Nominal Freq.: 3.58 to 50 MHz)
Frequency drift: ± 0.1 % max. -10 to 60 °C
- Saves height on P.C. board (Height: 5 mm max.)
- Taped version is available for automatic insertion
- RoHS compliant

■ Recommended Applications

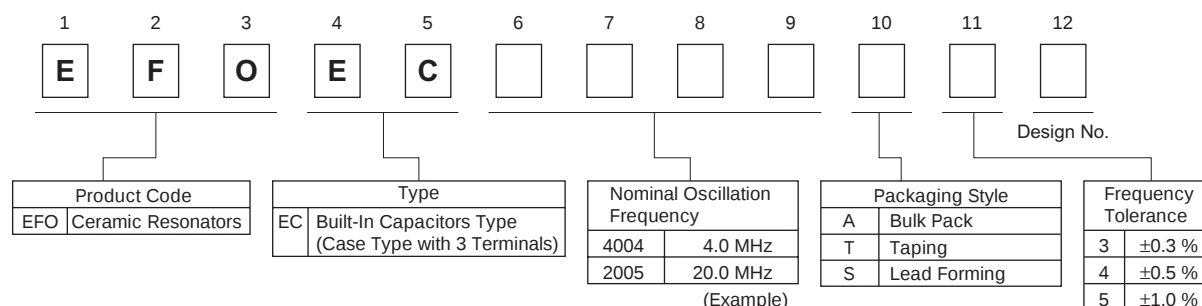
- Clock pulse generator for micro-processors
- Carrier between telecommunication equipment (telephone to telephone, personal computer to printer)

■ Handling Precautions (See Page 187 to 188)

■ Packaging Specifications

See Page 208

■ Explanation of Part Numbers



■ Ratings and Characteristics

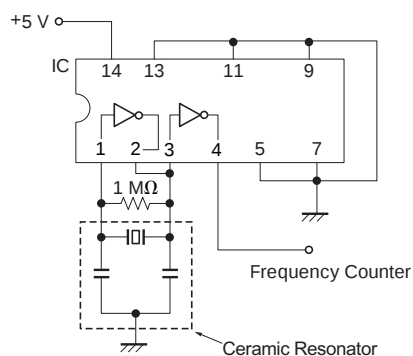
Part Number		Oscillation Frequency	Loop Gain (G)	Temperature Characteristics
Bulk Pack	Taping			
EFOEC2004A5	EFOEC2004T5	2.00 MHz $\pm$ 1.0 %	14 dB	Maximum Frequency drift: $\pm$ 0.6 %, -10 to 60 °C ($\pm$ 1.0 %, -20 to 80 °C)
EFOEC3584A4	EFOEC3584T4	3.58 MHz $\pm$ 0.5 %	12 dB	Maximum frequency drift $\pm$ 0.1 %, -10 to 60 °C ($\pm$ 0.2 %, -20 to 80 °C)
EFOEC4004A4	EFOEC4004T4	4.00 MHz $\pm$ 0.5 %		
EFOEC4194A4	EFOEC4194T4	4.19 MHz $\pm$ 0.5 %		
EFOEC5004A4	EFOEC5004T4	5.00 MHz $\pm$ 0.5 %		
EFOEC6004A4	EFOEC6004T4	6.00 MHz $\pm$ 0.5 %	10 dB	
EFOEC8004A4	EFOEC8004T4	8.00 MHz $\pm$ 0.5 %		
EFOEC1005A4	EFOEC1005T4	10.00 MHz $\pm$ 0.5 %	6 dB	
EFOEC2005A4	EFOEC2005T4	20.00 MHz $\pm$ 0.5 %	14 dB	
EFOEC3385A4	EFOEC3385T4	33.868 MHz $\pm$ 0.5 %	8 dB	

- Operating Temperature Range: -20 to 80 °C
- Frequency Drift: 0.3 % max./10 years

Note : If customer used other frequency, please ask us separately.

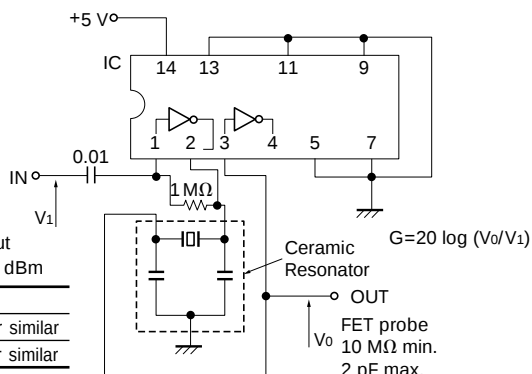
Test Circuit Diagram

For Oscillation Circuit



Frequency	IC
2.00 to 12.9 MHz	μPD 4069UBC or similar
13 to 50 MHz	μPD 74HCU04 or similar

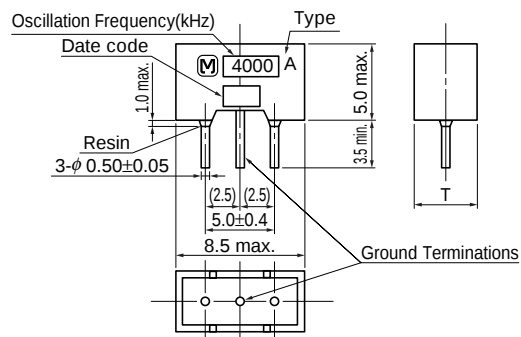
For Loop Gain



Dimensions in mm (not to scale)

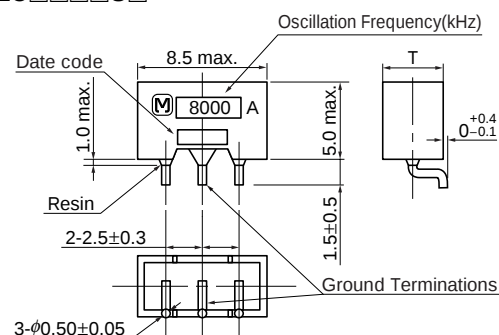
Bulk Pack

EFOEC□□□□A□



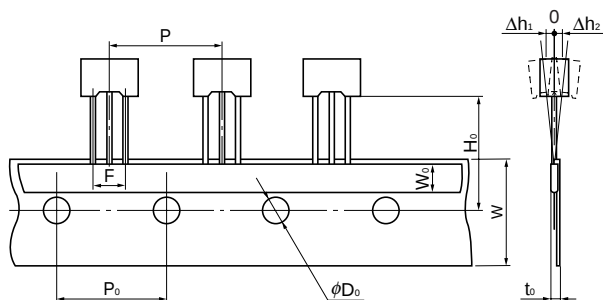
Lead Forming

EFOEC□□□□S□

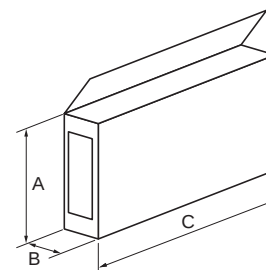


Dimensions for Taping in mm (not to scale)

EFOEC□□□□T□



Dimensions	
P	12.7±1.0
P ₀	12.7±0.3
W	18.0±1.0
W ₀	6.0 min.
H ₀	18.5±0.5
φD ₀	4.0±0.2
F	5.0±0.4
t ₀	1.5 max.
Δh ₁ , Δh ₂	2.0 max.

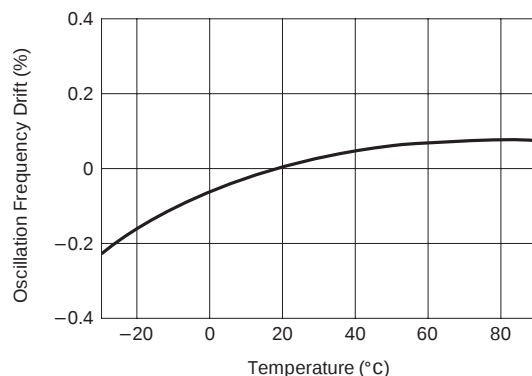


Dimensions*	
A	160 to 170
B	40 to 45
C	330

*Tolerance: ±3 mm

Typical Characteristics (EFOEC4004A4)

Temperature Characteristics



Standard Packing Quantity

Taping Pack	Bulk Pack
1000 pcs./box	4000 pcs./box